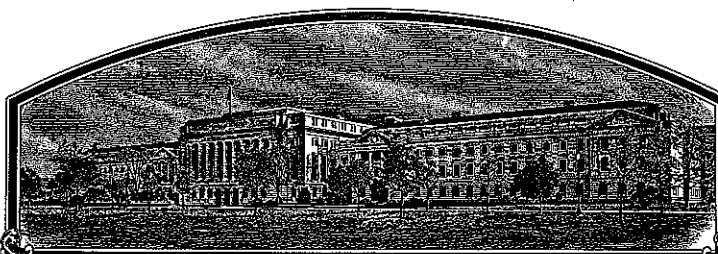


No.

200500247



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

JC Robinson Seeds, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE FEE THEREON IS FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC FURNISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE FOREGOING PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

CORN, FIELD

'H60231'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this sixteenth day of July, in the year two thousand and eight.

Attest:

Commissioner  
Plant Variety Protection Office

Secretary of Agriculture

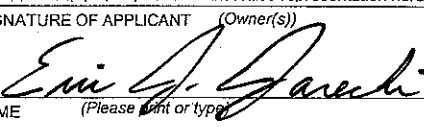
U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
D TECHNOLOGY DIVISION - PLANT VARIETY PROTECT

## APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U. S. C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U. S. C. 2426).

1. NAME OF OWNER JC Robinson Seeds, Inc.		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME		3. VARIETY NAME H60231	
4. ADDRESS (Street and No., R.F.D. No., City, State, and ZIP Code, and Country) 100 JC Robinson Blvd. PO Box 307 Waterloo, Nebraska 68069		5. TELEPHONE (include area code) (800) 330-9692		<b>FOR OFFICIAL USE ONLY</b> PVPO NUMBER <b>200500247</b> FILING DATE May 5, 2005	
		6. FAX (include area code) (402) 779-2910			
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) (Common name) Corporation		8. IF INCORPORATED, GIVE STATE OF INCORPORATION Nebraska		9. DATE OF INCORPORATION 8/01/1964	
10. NAME AND ADDRESS OF REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) Eric J. Jarecki Research Information Coordinator PO Box 307 Waterloo, Nebraska 68069				FILING AND EXAMINATION FEE: \$ 3652.00 DATE 5/5/05 CERTIFICATION FEE: \$ 768.00 DATE 3/28/08	
11. TELEPHONE (include area code) (402) 289-6503		12. FAX (include area code) (402) 779-2910		13. EMAIL EJARECKI@GHSEEDS.CO	
14. CROP KIND NAME (Common name) Corn		15. GENUS AND SPECIES NAME Zea Mays L.		16. FAMILY NAME (Botanical) Gramineae	
17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)			
a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of the Variety d. <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Applicant's Ownership f. <input checked="" type="checkbox"/> Voucher Sample: (2,500 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in an approved public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$3,652), made payable to "Treasurer of the United States (Mail to Plant Variety Protection Office)		19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act) <input type="checkbox"/> YES (If "yes", answer items 20 and 21 below) <input checked="" type="checkbox"/> NO (If "no", go to item 22)			
20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES IF YES, WHICH CLASSES? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED		21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS IF YES, SPECIFY THE <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED NUMBER 1, 2, 3, etc. (If additional explanation is necessary, please use the space indicated on the reverse)			
22. HAS THE VARIETY (INCLUDING AND HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U.S. OR OTHER COUNTRIES? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)		23. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse)			
24. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Applicant(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.					
SIGNATURE OF APPLICANT (Owner(s))  NAME (Please print or type) Eric J. Jarecki		SIGNATURE OF APPLICANT (Owner(s))  NAME (Please print or type)			
CAPACITY OR TITLE Research Information Coordinator		DATE 5-2-05		CAPACITY OR TITLE DATE	

**GENERAL:** To be effectively filed with the Plant Variety Protection Office (PVPO), ALL of the following items must be received in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to reproduce the variety, or for tuber reproduced varieties verification that a viable (in the sense that it will reproduce an entire plant) tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for \$3,652 (\$432 filing fee and \$3,220 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice.) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant an unfilled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. DO NOT use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$432 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

**Plant Variety Protection Office**

**Telephone: (301) 504-5518**

**FAX: (301) 504-5291**

**Homepage: <http://www.ams.usda.gov/science/pvpo/pvp.htm>**

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority and provide evidence that name has been cleared by the appropriate recognized authority before the Certificate of Protection is issued. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, 10301 Baltimore Avenue, Suite 401 NAL Building, Beltsville, MD 20705. Telephone: (301) 504-5682 <http://www.ams.usda.gov/lsg/seed.htm>.

#### ITEM

- 19a. Give:
- (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
  - (2) the details of subsequent stages of selection and multiplication;
  - (3) evidence of uniformity and stability; and
  - (4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 19b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
- (1) identify these varieties and state all differences objectively;
  - (2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
  - (3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 19c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 19d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 19e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
20. If "Yes" is specified (seed of this variety be sold by variety name only, as a class of certified seed), the applicant MAY NOT reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
23. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
24. See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.

**22. CONTINUED FROM FRONT** (Please provide a statement as to the limitation and sequence of generations that may be certified.)

**23. CONTINUED FROM FRONT** (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

**24. CONTINUED FROM FRONT** (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

**NOTES:** It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. The fees for filing a change of address; owner's representative; ownership or assignment; or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 1.4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-6964 (voice and TDD). USDA is an equal opportunity provider and employer.

## Origin and Breeding History of H60231

## Exhibit A:

H60231 is a corn inbred line developed from the single cross of CI9802/W60028 the pedigree method of breeding. Selfing and selection were conducted eight generations in its development. The selection criteria used in the development of H60231 included: grain yield, high plant density tolerance, good stand establishment, silking and pollen shedding ability, stalk and root strength, stay green appearance during senescence, seed quality, and disease tolerance. Testcrosses with unrelated inbreds were made and evaluated over multiple years and locations in the promotion of H60231 to commercial status in hybrid combination.

CI9802, a progenitor of H60231, is a proprietary field corn inbred of The J.C. Robinson Seed Co.

CI9802 was developed from FR1064.G104/3540/G104.

FR1064 is a commercially available inbred from Illinois Foundation Seed Co.

G104, a progenitor of CI9802, is a proprietary field corn inbred of The Golden Seed Company (an associate company selling the Golden Harvest brand of seed). G104 was developed from a synthetic population. \*

3540 is a commercial hybrid from Pioneer Hybrid Seed Co. Inc.

W60028, a progenitor of H60231, is a proprietary field corn inbred of The J.C. Robinson Seed Co., and has a utility patent number 6686520.

H60231 has shown uniformity and stability for all traits as described in Exhibit C – "Objective Description of Variety". It has been self pollinated and ear-rowed for eight generations, with careful attention given to uniformity of plant type to ensure homozygosity and phenotypic purity. During the advanced stages of development, hand-pollinated increases of H60231 were observed by the developing breeder to assure stability and uniformity of the inbred line for at least three generations as an inbred as well as in hybrid combinations. No variant traits have been observed or are expected in H60231.

## Development history of H60231:

<u>Location/Season/Year</u>	<u>Inbreeding Level</u>	<u>Pedigree/Ear Id.</u>
WL PRBR:104/04/1998	S0 self	CI9802/W60028)-X
HS N3/04/1999	S1 self and select	CI9802/W60028)-X-21
HS N2/04/2000	S2 self and select	CI9802/W60028)-X-21-3
PR P4/11/2000	S3 self and select	CI9802/W60028)-X-21-3-1
HS TC23/04/2001	S4 self and select	CI9802/W60028)-X-21-3-1-1
MX SELFA/11/2001	S5 self and select	CI9802/W60028)-X-21-3-1-1-2
HS IINC/04/2002	S6 self and select	CI9802/W60028)-X-21-3-1-1-2-5
HS NUR2/04/2003	S7 self and bulk	CI9802/W60028)-X-21-3-1-1-2-5-X

\* Synthetic population is BS14Syn01 which is a version of Iowa's Stiff Stalk Synthetic.

JMS 1/30/08  
from PVP No. 200400182

200500247

Exhibit B.

H60231 most closely resembles W60028

The following color traits are uniquely different from the check:

Trait	H60231			W60028		
	Number Value	Color	Munsell Code	Number Value	Color	Munsell Code
Anther Color	9	Salmon	10R6/8	22	Tan	10R7/4

The following traits were observed to be different between the inbred and the standard check:

Trait	H60231		W60028	
	Number Value	Description	Number Value	Description
Leaf Marginal Waves	5	1=none to 9=many	8	1=none to 9=many
Leaf Longitudinal Creases	6	1=none to 9=many	4	1=none to 9=many
Ear Taper	2	Average	1	Slight

United States Department of Agriculture, Agricultural Marketing Service  
Science Division, Plant Variety Protection Office  
National Agricultural Library Building, Room 500  
Beltsville, MD 20705  
OBJECTIVE DESCRIPTION OF VARIETY  
CORN (Zea mays L.)

Name of Applicant(s) <b>JC Robinson Seeds, Inc.</b>	Variety Seed Source 200304HSNUR2-048045	Variety Name or Temporary Designation H60231
Address (Street No., or R.F.D., City, State, Zip Code and Country) <b>100 J.C. Robinson Blvd., Waterloo, NE 68069 USA</b>		FOR OFFICIAL USE PVPO Number <b>200500247</b>

Place the appropriate number that describes the varietal characters typical of this inbred variety in the spaces below. Right justify whole numbers by adding leading zeroes if necessary. Completeness should be striven for to establish an adequate variety description. Traits designated by a '\*' are considered necessary for an adequate variety description and must be completed.

COLOR CHOICES (Use in conjunction with Munsell color code to describe all color choices: describe #25 and #26 in Comments section):

01=Light Green	06=Pale Yellow	11=Pink	16=Pale Purple	21=Buff
02=Medium Green	07=Yellow	12=Light Red	17=Purple	22=Tan
03=Dark Green	08=Yellow-Orange	13=Cherry Red	18=Colorless	23=Brown
04=Very Dark Green	09=Salmon	14=Red	19=White	24=Bronze
05=Green-Yellow	10=Pink-Orange	15=Red-White	20=White Capped	25=Varigated (Describe)
				26=Other (Describe)

STANDARD INBRED CHOICES (Use the most similar (in background and maturity) of these to make comparisons based on grow-out trial data):

Yellow Dent Families:		Yellow Dent (Unrelated):	Sweet Corn:
Family	Members		
B14	CM105, A632, B64, B68	Co109, ND246	C13, Iowa5125, P39, 2132
B37	B37, B76, H84	Oh7, T232	
B73	N192, A679, B73, NC268	W117, W153R	Popcorn:
C103	Mo17, Va102, Va35, A682	W182BN	SG1533, 4722, HP301, HP7211
Oh43	A619, MS71, H99, Va26	White Dent:	Pipecorn:
WF9	W64A, A554, A654, Pa91	Ci66, H105, Ky228	Mo15W, Mo16W, Mo24W

1. TYPE (describe intermediate types in Comments section) * 2 1=Sweet 2=Dent 3=Flint 4=Flour 5=Pop 6=Ornamental 7=Pipecorn	Standard Inbred Name 2 B73
2. REGION WHERE DEVELOPED IN THE U.S.A.: * 2 1=Northwest 2=Northcentral 3=Northeast 4=Southeast 5=Southcentral 6=Southwest 7=Other	Standard Seed Source 2 92ncei01
3. MATURITY (In Region Best Adaptability: show Heat Unit formula in "Comments" section): DAYS HEAT UNITS * 071 1187.0 From emergence to 50% of plants in silk * 072 1203.5 From emergence to 50% plants in pollen 002 0033.0 From 10% to 90% pollen shed (*) From 50% silk to optimum edible quality From 50% silk to harvest at 25% moisture	DAYS HEAT UNITS 069 1142.5 069 1155.5 001 0026.0
4. PLANT: * 264.7 cm Plant Height (to tassel tip) 21.3 30 * 110.5 cm Ear Height (to base of top ear node) 07.4 30 015.1 cm Length of Top Ear Internode 01.4 30 0.0 Average Number of Tillers 00.0 30 1.4 Average Number of Ears per Stalk 00.5 30 * 3 Anthocyanin of Brace Roots: 1=Absent 2=Faint 3=Moderate 4=Dark	Standard Deviation Sample Size 250.6 07.8 30 113.9 07.4 30 016.4 01.4 30 0.0 00.0 30 1.1 00.3 30 4

Application Variety Data		H60231	Page 2		Standard Inbred Data		B73
5. LEAF			Standard Deviation	Sample Size	Standard Deviation		Sample Size
*	009.4	cm Width of Ear Node Leaf	1.3	30	009.4	0.6	30
*	081.8	cm Length of Ear Node Leaf	7.9	30	077.9	6.8	30
*	06	Number of leaves above top ear	0.6	30	06	0.6	30
	019	Degrees Leaf Angle	4.7	30	011	3.8	30
	(measure from 2nd leaf above ear at anthesis to stalk above leaf)						
*	03	Leaf Color (Munsell code)	7.5GY5/6		03	(Munsell code)	7.5GY4/4
	7	Leaf Sheath Pubescence (Rate on scale from 1=none to 9=like peach fuzz)			5		
	5	Marginal Waves (Rate on scale from 1=none to			7		
	6	Longitudinal Creases (Rate on scale from 1=none to 9=many)			4		
6. TASSEL:			Standard Deviation	Sample Size	Standard Deviation		Sample Size
*	06	Number of Primary Lateral Branches	01.0	30	05	01.0	30
	030	Branch Angle from Central Spike	08.6	30	023	08.6	30
*	37.9	cm Tassel Length	05.1	30	38.0	06.8	30
	(from top leaf collar to tassel tip)						
	6	Pollen Shed (Rate on scale from 0=male sterile to 9=heavy shed)			7		
	09	Another Color (Munsell code)	10R6/8		22	(Munsell code)	7.5YR8/6
	02	Glume Color (Munsell code)	7.5GY6/8		02	(Munsell code)	7.5GY6/8
	1	Bar Glumes (Glume Bands): 1=Absent 2=Present			1		
7a. EAR (Unhusked Data):							
	16	Silk Color (3 days after emergence) (Munsel code)	5RP6/8		05	(Munsell code)	2.5GY8/6
	02	Fresh Husk Color (25 days after 50% silking) (Munsell	7.5GY7/6		02	(Munsell code)	7.5GY6/8
	21	Dry Husk Color (65 days after 50% silking) (Munsell code)	10YR9.25/1.5		21	(Munsell code)	10YR9/1.5
	1	Position of Ear at Dry Husk Stage: 1=Upright 2=Horizontal 3=Pendant			1		
	5	Husk Tightness (Rate on scale from 1=very loose to 9=very tight)			6		
	2	Husk Extension (at harvest): 1=Short (ears exposed) 2=Medium (<8 cm)			2		
		3=Long (8-10 cm beyond ear tip) 4=Very Long (>10 cm)					
7b. EAR (Husked)			Standard Deviation	Sample Size	Standard Deviation		Sample Size
	16.2	cm Ear Length	00.9	30	14.4	00.7	30
	44.8	mm Ear Diameter at	01.8	30	48.2	01.0	30
	161.6	gm Ear Weight	14.2	30	157.3	12.6	30
	18	Number of Kernel	01.5	30	18	01.6	30
	2	Kernel Rows: 1=Indistinct 2=Distinct			2		
	1	Row Alignment: 1=Straight 2=Slightly Curved 3=Spiral			1		
	06.3	cm Shank Length	00.7	30	10.2	01.2	30
	2	Ear Taper: 1=Slight 2=Average			1		
Application Variety Data			Standard Inbred Data				
Note: Use chart on first page to choose color codes for color traits.							

SMS 4/27/07

Application Variety Data			H60231		Page 3		Standard Inbred Data			B73	
8. KERNEL (Dried)			Standard Deviation		Sample Size		Standard Deviation			Sample Size	
11.6 mm Kernel Length			00.5		30		12.3			00.3 30	
07.1 mm Kernel Width			00.4		30		07.6			00.4 30	
04.5 mm Kernel Thickness			00.2		30		04.1			00.2 30	
21.1 % Round Kernels (Shape Grade)			07.6		30		34.2			05.8 30	
1 Aleurone Color Pattern: 1=Homozygous 2=Segregating							1				
(*)	18 Aleurone Color (Munsell code)		COLORLESS				18 (Munsell code)			COLORLESS	
*	07 Hard Endosperm Color (Munsell code)		2.5Y8/10				07 (Munsell code)			2.5Y8/10	
*	03 Endosperm Type: 1=Sweet (sul) 2=Extra Sweet (sh2) 3=Normal Starch						03				
4=High Amylose Starch 5=Waxy Starch 6=High Protein 7=High Lysine											
8=Super Sweet (se) 9=High Oil 10=Other											
27.2 gm Weight per 100 Kernels (unsized sample)			01.4		30		29.0			01.4 30	
9. COB			Standard Deviation		Sample Size		Standard Deviation			Sample Size	
*	25.9 mm Cob diameter at mid-point		01.4		30		27.9			00.9 30	
19 Cob Color (Munsell code)			10Y9.25/1.0				12 (Munsell code)			5R6/10	
10. DISEASE RESISTANCE (Rate from 1 (most susceptible) to 9 (Most resistant): leave blank if not tested: leave Race or Strain Options blank if polygenic):											
A. Leaf Blights, Wilts, and Local Infectio											
Anthracnose Leaf Blight (Colletotrichum graminicola)											
Common Rust (Puccinia sorghi)											
Common Smut (Ustilago maydis)											
Eyespot (Kabatiella zeae)											
Goss's Wilt (Clavibacter michiganese spp. nebraskense)											
Gray Leaf Spot (Cercospora zeae-maydis)											
Helminthosporium Leaf Spot (Bipolaris maydis) Race											
Northern Leaf Blight (Exserohilum turcicum) Race											
Southern Leaf Blight (Bipolaris maydis) Race											
Southern Rust (Puccinia polysora) Race											
Stewart's Wilt (Erwinia stewartii)											
Other (Specify) _____											
B. Systemic diseases											
Corn Lethal Necrosis (MCMV and MDMV)											
Head Smut (Sphacelotheca reiliana)											
Maize Chlorotic Dwarf Virus (MCDV)											
Maize Chlorotic Mottle Virus (MCMV)											
Maize Dwarf Mosaic Virus (MDMV) Strain											
Sorghum Downy Mildew of Corn (Peronosclerospora sorghi)											
Other (Specify) _____											
C. Stalk Rots											
Anthracnose Stalk Rot (Colletotrichum graminicola)											
Diplodia Stalk Rot (Stenocarpella maydis)											
Fusarium Stalk Rot (Fusarium moniliforme)											
Gibberella Stalk Rot (Gibberella zeae)											
Other (Specify) _____											
D. Ear and Kernel Rots											
Aspergillus Ear and Kernel Rot (Aspergillus flavus)											
Diplodia Ear Rot (Stenocarpella maydis)											
Fusarium Ear and Kernel Rot (Fusarium moniliforme)											
Gibberella Ear Rot (Gibberella zeae)											
Other (Specify) _____											
Application Variety Data						Standard Inbred Data					
Note: Use chart on first page to choose color codes for color traits.											



11. INSECT RESISTANCE (Rate from 1 (most susceptible) to 9 (most resistant):  
leave blank if not tested):

	Standard Deviation	Sample Size	Standard Deviation	Sample Size
Banks Grass Mite ( <i>Oligonychus pratensis</i> )				
Corn Earworm ( <i>Helioverpa zea</i> )				
Leaf-Feeding				
Silk Feeding :				
mg larval wt.				
Ear Damage				
Corn Leaf Aphid ( <i>Rhopalosiphum maidis</i> )				
Corn Sap Beetle ( <i>Carpophilus dimidiatus</i> )				
European Corn Borer ( <i>Ostrinia nubilalis</i> )				
1st Generation (Typically Whorl Leaf Feeding)				
2nd Generation (Typically Leaf Sheath-Collar Feeding)				
Stalk Tunneling				
cm tunneled/plant				
Fall Armyworm ( <i>Spodoptera frugiperda</i> )				
Leaf-Feeding				
Silk-Feeding :				
mg larval wt.				
Maize Weevil ( <i>Sitophilus zeamaze</i> )				
Northern Rootworm ( <i>Diabrotica barberi</i> )				
Southern Rootworm ( <i>Diabrotica undecimpunctata</i> )				
Southwestern Corn Borer ( <i>Diatraea grandiosella</i> )				
Leaf Feeding				
Stalk Tunneling :				
cm tunneled/plant				
Two-spotted Spider Mite ( <i>Tetranychus urticae</i> )				
Western Rootworm ( <i>Diabrotica virgifera virgifera</i> )				
Other (Specify)				

AGRONOMIC TRAITS

7 Stay Green (at 65 days after anthesis) (Rate on a scale from 1=worst to 9=excellent.)	3
% Dropped Ears (at 65 days after anthesis)	
% Pre-anthesis Brittle Snapping	
% Pre-anthesis Root Lodging	
00.0 % Post-anthesis Root Lodging (at 65 days after anthesis)	00.0
Kg/ha Yield of Inbred Per Se (at 12-13% grain moisture)	

13. MOLECULAR MARKERS: (0=data unavailable: 1=data available but not supplied: 2=data supplied)

0 Isozyme      0 RFLP's      0 RAPD's

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## General Information

Two trials were grown in East Central Nebraska near Waterloo, Nebraska for the purpose of observing data on trait characteristics for PVP and patenting requirements.

Trial 1 (location 1 in the data) was planted 5/10/2004.

Trial 2 (location 2 in the data) was planted 5/19/2004.

Multiple dates were timed throughout the growing season to observe the various traits at their maximum expression. Approximately 120 plants were grown in four row plots. 15 plants from the middle two rows were sampled for recording trait information.

The heat units or GDU (growing degree units) is the number of heat units required for an inbred line to reach either silk emergence or pollen shed from the time of planting. Heat units are calculated by the Barger method, where the heat units for a 24 hour-period are:

$$\text{GDU} = \frac{\text{Max.} + \text{Min.}}{2} - 50$$

The highest maximum used is 86 degrees Fahrenheit and the lowest minimum used is 50 degrees Fahrenheit. For each inbred line, it takes a certain number of heat units to reach various stages of plant development. They are a way of measuring plant maturity.

The Student's t-Test analysis is used to show significant differences from the standard check it most closely resembles. A normal distribution is assumed for this analysis.

The trials were grown in a nested (RCB) randomized complete block design. It was nested to gain maximum precision for observed traits for the new varieties' comparison with the standard inbred variety. In other words, the true varieties were planted in close proximity to each other. The objective (hypothesis) of the trial was to collect data on different traits to compare between different varieties for Exhibits B, C, and C on the PVP application forms.

Data were collected on 15 different plants per location per trait for each entry in the trial for statistical analysis. The data were collected at varying stages throughout the growing season.

Accumulated GDU and Rainfall for 2004:

<u>Month</u>	<u>GDU</u>	<u>Rainfall</u>
May	429	6.36
June	956	2.59
July	1636	8.37
Aug	2229	2.37

LMS 4/27/07

Exhibit D.

H60231 additional information JCR503

The following traits were observed to be different between the inbred and the check:

Trait	H60231		JCR503	
	Number Value	Description	Number Value	Description
Brace Root Anthocyanin	3	Moderate	2	Faint
Leaf Longitudinal Creases	6	1=none to 9=many	2	1=none to 9=many
Ear Taper	2	Average	1	Slight

The following traits are highly significant at the 1% level (Student's t-Test procedure) for each location analysis as well as the combined location analysis:

**Exhibit D. t-test statistics, (Additional information).**

Trait	Loc	H60231			JCR503			Mean	t-Value	Prob
		N	Mean	SD1	N	Mean	SD2	Diff		
Tassel Length	1	15	39.8	4.8	15	46.1	5.7	-6.3	-3.25	0.0030
Tassel Length	2	15	36.0	4.7	15	41.4	3.4	-5.4	-3.60	0.0012
Tassel Length	Avg	30	37.9	5.1	30	43.8	5.2	-5.9	-4.40	0.0000
Ear Length	1	15	16.2	0.9	15	14.3	0.8	1.9	6.14	0.0000
Ear Length	2	15	16.2	1.0	15	15.0	0.4	1.2	4.50	0.0001
Ear Length	Avg	30	16.2	0.9	30	14.7	0.7	1.6	7.38	0.0000
Ear Diameter	1	15	45.3	1.7	15	47.5	1.4	-2.2	-3.91	0.0005
Ear Diameter	2	15	44.3	1.8	15	48.6	1.1	-4.3	-7.89	0.0000
Ear Diameter	Avg	30	44.8	1.8	30	48.1	1.3	-3.3	-7.95	0.0000
Shank Length	1	15	6.3	0.5	15	8.9	1.2	-2.6	-7.89	0.0000
Shank Length	2	15	6.3	0.9	15	9.2	1.2	-2.9	-7.41	0.0000
Shank Length	Avg	30	6.3	0.7	30	9.1	1.2	-2.8	-10.91	0.0000
Kernel Width	1	15	6.9	0.4	15	8.0	0.4	-1.0	-7.00	0.0000
Kernel Width	2	15	7.2	0.5	15	7.9	0.6	-0.7	-3.59	0.0012
Kernel Width	Avg	30	7.1	0.4	30	7.9	0.5	-0.9	-7.09	0.0000
% Round Kernels	1	15	26.7	4.5	15	31.5	4.4	-4.8	-2.95	0.0063
% Round Kernels	2	15	15.6	5.8	15	34.2	7.2	-18.6	-7.84	0.0000
% Round Kernels	Avg	30	21.1	7.6	30	32.8	6.0	-11.7	-6.63	0.0000
Cob Diameter	1	15	26.1	1.2	15	28.0	1.2	-1.8	-4.06	0.0004
Cob Diameter	2	15	25.7	1.6	15	29.9	1.4	-4.2	-7.83	0.0000
Cob Diameter	Avg	30	25.9	1.4	30	28.9	1.6	-3.0	-7.76	0.0000

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE**EXHIBIT E**  
**STATEMENT OF THE BASIS OF OWNERSHIP***The following statements are made in accordance with the Privacy Act of 1974 (5 U. S. C. 552a) and the Paperwork Reduction Act (PRA) of 1995.**Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U. S. C. 2426).*

1. NAME OF APPLICANT(S)  JC Robinson Seeds, Inc.	2. TEMPORARY DESIGNATION EXPERIMENTAL NUMBER	3. VARIETY NAME  H60231
4. ADDRESS (Street and No., R.F.D. No., City, State, and ZIP Code, a 100 JC Robinson Blvd. PO Box 307 Waterloo, Nebraska 68069	5. TELEPHONE (include area code)  (402) 289-6503	6. FAX (include area code)  (402) 779-2910
7. PVPO NUMBER		<b>200500247</b>

8. Does the applicant own all rights to th Mark an "X" in appropriate If no, please explain. ☒ YES ☐ NO9. Is the applicant (individual or company) a U.S. national or U.S. based company? ☒ YES ☐ NO

If no, give name of country

10. Is the applicant the original own ☒ YES ☐ NO If no, please answer ONE of the following:

a. If original rights to variety were owned by individual(s), is (are) the original owner(s) national(s)?

☒ YES ☐ NO If no, give name of country

b. If original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?

☒ YES ☐ NO If no, give name of country

11. Additional explanation on ow (if needed, use reverse for extra space)

The variety for which Plant Variety Protection is hereby sought was developed by Theron Roundy, an employee of the JC Robinson Seeds company. By agreement between the employee and the JC Robinson Seeds company all rights to any invention, discovery, or development made by the employee while employed by the JC Robinson Seeds company are assigned to the JC Robinson Seeds company with no right of any kind retained by the employee.

**PLEASE NOTE:**

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 10 minutes per response including the time for reviewing instructions searching existing data sources, gathering and maintaining the data needed and completing and reviewing the collection of information.

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To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250 or call 1-800-245-6340 (voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.